

REMARKS/ARGUMENTS

Claims 1-25 remain in the Application. Reconsideration and re-examination are respectively requested. Claims 1-17, 22 and 23 have been canceled. New claims 26-34 have been added.

Independent claim 1 has been cancelled and replaced by new independent claim 26 drawn to an injection mold for plastic articles having a metallic appearance. New independent claim 26 particularly points out and distinctly claims an injection mold for use in combination two or more plastic materials including metallic flake pigments to provide plastic articles having a uniform metallic appearance, the mold including a first gate design for feeding a first plastic material including metallic flake pigments to a mold cavity, wherein said first gate design includes at least one first gate design mold member, said first gate design mold member comprising at least one interchangeable member, located in a recess in at least one of said first and said second mold sections, said interchangeable member of a first size and configuration to provide a uniform metallic appearance to said plastic articles formed from said first plastic material including metallic flake pigments; and a second gate design for feeding a second plastic material including at least one metallic flake pigment different from that of said first plastic material, said second gate design including a second gate design mold member, said second gate design mold member comprising at least one interchangeable member, said second gate design mold member exchangeably placeable in said recess of at least one of the first and the second mold sections for said first gate design mold member, said at least one interchangeable member of said second gate design mold member of a second size and configuration, said size and configuration different from the size and configuration of said

Appln. No. 10/089,558
Amndt. dated Apr. 29, 2005
Reply to Office Action dated Nov. 2, 2004

first at least one interchangeable member, wherein said different size is selected based upon said second plastic material and wherein said different size is selected to ensure that said second plastic material flows into said cavity provides a uniform metallic appearance. Support may be found at page 3 lines 17-22; page 5, lines 4-10; page 6, lines 3-16; and page 6 lines 31 to page 7, line 6.

New dependent claims 27-34 are similar to original claims 3, 4, 6, 7, 10, 12, 14, and 16 and now depend from new independent claim 26.

Claim 18 has been amended to recite that a first gate design mold member, including an orifice having dimensions, is provided by two interchangeable members, one member located in a recess in the first mold section and the second being located in a recess in the second mold section. A first plastic material including pigments used to modify light reflectivity is used to form a product. A second gate design mold member, exchangeable with the first, but having an orifice of different dimensions, includes two interchangeable members located in recesses of the mold sections. The first gate design mold member is exchanged for the second design mold member and a second product formed of a second material, wherein the second material includes at least one pigment that is different from the first material. Support may be found at page 5, lines 4-10; page 6, lines 3-16; and page 6 lines 31 to page 7, line 6.

Dependent claims 19 -21, 24 and 25 have been amended to recite correct antecedent basis to amended claim 18.

In the Office Action dated November 2, 2004, claims 1-25 were rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. The Examiner stated that "[t]he newly amended claims 1 and 18, discusses the first gate design mold member having an orifice with dimensions different from the dimensions of the second

Appln. No. 10/089,558
Amndt. dated Apr. 29, 2005
Reply to Office Action dated Nov. 2, 2004

gate mold member orifice.” The Examiner comments that there is no support in the Specification for the concept of differences in the dimensions of the orifice of the gate designs.

With reference to page and line numbers of WO 01/23156 (PCT/US00/26901), support for this concept may be found as follows:

- page 3, lines 10-16, wherein **apparatus alterations** in addition to injection molding process and thermoplastic compositional alterations, were the subject of experimentation. “More specifically, injection mold alterations focused on **gate design**, such as **size**, **configuration** and **location**”. Design, size configuration and location are all a function of and described by **dimensions**.
- Page 3, lines 17-27, wherein it is noted that altering gate design produced an acceptable level of quality (i.e., changing dimensions of the gate). The Specification goes on to point out that having different gate designs for each thermoplastic composition could only be achieved by **significant injection mold alteration** requiring substantial time to accomplish. An alternative, albeit cost prohibitive, would be to fabricate a different injection mold for each thermoplastic composition.
- Page 3, line 29 to page 4, line 2, wherein the need is stated “an injection mold which would facilitate quick, inexpensive gate design alteration to facilitate high volume, low cost production.

- Page 6, lines 3-8 describes the gate portion 20 of first gate design mold member 40, formed by two interchangeable members 41 and 42 and recites; “Thus, the gate portion 20 is sometimes referred to as an edge gate. As shown in FIG. 3, an orifice 38 is defined at the gate portion 20. In other words, the gate portion 20 is smaller or narrower **in dimension** that the first section 22a of the runner portion 22” (emphasis added). The orifice is described as having a thickness in the range of 0.010 inches to the nominal thickness of the product and a length in the range of 0.040 inches to the nominal length of the product, more specifically 0.030 – 0.050 inches in thickness and 0.50 – 1.00 inches in length.
- Page 6, line 29 to page 7, line 6 go on to describe the essence of the present invention wherein interchangeable gate members 41, 42 are removed and new interchangeable members “which correspond to **an acceptable gate design** for a second plastic material” are inserted into the mold. “It should be understood that each plastic material may have its own interchangeable members to define its own gate design as required to manufacture acceptable products.”

Thus the invention contemplates at least two gate designs, quantifiable in terms of dimensions, the designs including interchangeable mold members, the designs different from one another (in terms of dimension). The designs each include a gate portion (or edge gate,

Appln. No. 10/089,558
Amndt. dated Apr. 29, 2005
Reply to Office Action dated Nov. 2, 2004

see page 6, line 5) which include an orifice of preferred dimensions, the dimensions chosen to produce injection molded articles of two different plastic materials having different metallic appearances.

In the Office Action mailed November 2, 2004, claims 1-5 and 18-25 were rejected under 35 USC 103(a) in view of Hepler, et al. (United States Patent No. 5,334,006).

Hepler, et al. is directed at a hot sprue bushing having an interchangeable tip with multiple edge gates for **controlling the temperature** of a plasticized material as it is conveyed through the plate of a mold to cavity gates (see column 3, lines 39-45 of '006). The need addressed by the invention is for a simplified edge gate system capable of being used in **multi-cavity applications** (see column 3, lines 23-24). The tip 39 may have a variety of edge gate configurations each of which has a **plurality of equally spaced exit ports 49**. **Each flow channel or port feeds a mold cavity**. "The tip releasably screws into the terminal end of the body, substantially surrounding it, to couple to the elongated bore and provide a **plurality of edge gates which can couple with a like number of cavities for the purpose of conveying plasticized material to them**" (see column 3, lines 50-55 of '006). Also, "the exit ports 35, at least in part, define edge gates to a **plurality of mold cavities**" (see column 5, lines 4-5 of '006). You will note that the sprue bushing is round (see **FIGS. 1-7** of '006) and that the channels 49 that feed the orifice 47 are radial (see **FIGS. 9, 10**). Again, this is consistent with a plurality of edge gates feeding a like plurality of cavities. Hepler, et al. may exchange the tip to conform to a different **number** of cavities in a mold. Hepler, et al.'s sprue bushing fits through the stationary plate of the machine and is **not** part of or attached to the

mold. Hepler, et al. also discloses interchangeable spacing sleeves to match a range of stationary plate thicknesses.

Hepler, et al. is not directed at nor does it suggest or disclose an interchangeable gate portion (insert) for a mold being filled with a first plastic material, wherein a second portion (insert) of a different design and dimensions may easily replace the first portion to change the flow pattern or flow front of a second plastic material which includes metallic flake-type coloring materials.

Hepler, et al.'s invention is directed at controlling the temperature of a plasticized melt through a sprue busing having a plurality of edge gates which communicate with a like plurality of mold cavities.

The present invention discloses the use of **first and second gate design mold members 40 or gate portions which are defined by two interchangeable members 41, 42.** The interchangeable members function to allow the adjustment of polymer flow fronts emanating from the gate 20 in order that sequential products of different colors, which include pigments used to modify light reflectively, can be injection molded without surface defects (weld, lines, visible flow fronts). Thus, major modifications to the mold are not required between the molding of the products of different colors (also defined as different plastic materials). Filled polymer compositions, particularly those containing various types of flat particles or flakes, such as light reflective pigments as colorants, are popular today to create a unique appearance as well as to eliminate the need for painting. The rheological characteristics of these polymer compositions vary widely from color to color, particularly in automobile applications, due to the physical nature of these colorants. However, it is not cost

Appln. No. 10/089,558
Amndt. dated Apr. 29, 2005
Reply to Office Action dated Nov. 2, 2004

effective to have separate molds or even to modify to a mold to optimize the processing characteristics for each color.

According to this invention, the entry points for polymer to the mold can now be built to accommodate interchangeable gate mold members or **gate portions (inserts)**, which include orifices of such dimensions such that the gate may either be open or closed or may partially limit polymer melt flow into a specific area of a mold, thus allowing polymer flow fronts to be adjusted. This results in less visible weld lines, swirls and flow patterns of the filled polymer such that products having acceptable surface appearance can be produced. In this manner, when a color change (or polymer change) is accomplished on a molding machine, only minor changes, in rapid fashion, need be made to the mold (interchanging gate portions or inserts to one specifically designed and dimensioned to provide acceptable appearing parts of a second (color) plastic).

Or, in other words, by providing a mold with a "first gate design" and a "second gate design", the gate designs each having different dimensions, one can **selectively control the filling pattern for the mold**, by adjusting, for example, the openings (orifice dimensions) on the respective gates (interchangeable mold members). This versatility in the mold provides an economical means to shift the filling pattern of the mold and avoids the need to change the entire mold, reducing tooling costs and downtime.

Thus, an important aspect of the present invention is to provide such interchangeable members (gate inserts) primarily designed to service a **single mold**, to allow the adjustment of polymer flow fronts to improve the aesthetics of metallic appearing plastic molded articles.

Hepler, et al. recites that the "tip 39 may have a variety of edge configurations, each of which has a plurality of equally spaced parts 49. FIG 4 illustrates a four-part configuration

while **FIG. 10** shows an eight-part embodiment. In each configuration, it is important to take care to assure that **each flow channel to each cavity** experiences the same thermal environment to assure uniformity of heating and part filling.” See column 7, line 63 to column 8, line 2 of Hepler, et al. (‘006), (emphasis added). Thus, changing edge gate configuration is directed at changing the **number** of cavities being filled and providing the same thermal environment **to each cavity**. There is no consideration of changing anything with respect to the size of the edge gate, and Hepler, et al. is simply not directed at providing first and second gate portions each having an orifice of different dimensions such that first and second polymeric materials having different light reflective materials may be successfully molded in a single mold.

The interchangeable members, 41, 42 in FIG. 3 of the Application are respectively located in mold sections 12, 14, across the parting line of the mold. The members separate when the mold opens. Hepler, et al. does not teach or suggest a gate portion including interchangeable members, one member located in a first mold portion, the second member located in a second mold portion as recited in amended independent claims 18 and new claim 26. Hepler, et al.’s gates/orifices are all located in the tip of the hot sprue bushing which is located in the stationary plate of the injection molding press.

Given the above, and the fact that Hepler, et al. completely fails to teach or suggest the referenced features of the claims herein, it is respectfully submitted that the outstanding rejection of Hepler, et al. has been traversed, and the amended claims herein satisfy the requirements of 35 USC 103. Applicant respectfully submits that all claims currently pending

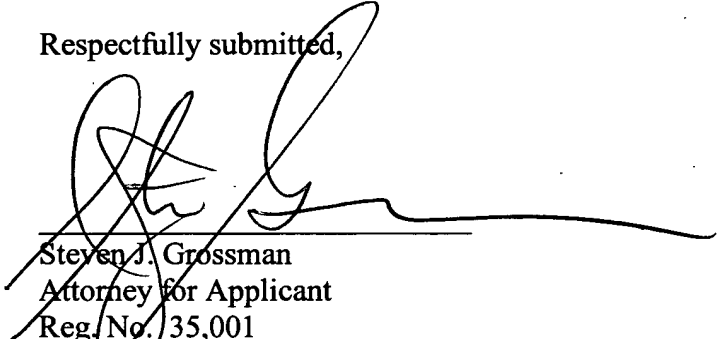
Appln. No. 10/089,558
Amndt. dated Apr. 29, 2005
Reply to Office Action dated Nov. 2, 2004

in the application are believed to be in condition for allowance. Allowance at an early date is respectfully solicited.

In the event the Examiner deems personal contact is necessary, please contact the undersigned attorney at (603) 668-6560.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 50-2121.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service First Class Mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on **April 29, 2005**, at Manchester, New Hampshire.

By 
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